

Seminari Informal de Matemàtiques de Barcelona

Speaker: Juan Pello García.
University: Universitat de Barcelona.

Date: Wednesday, 10th of October.
Schedule: 12:00, *coffee break*; 12:20, talk.
Place: T1 classroom, *Facultat de Matemàtiques* of UB.
Language: Spanish.

Title: Lorenz dynamics prevail under compressibility.

Abstract: In the present talk we will make the route that goes from the fundamental equations of Fluid Mechanics (continuity equation, Navier-Stokes equations and the conservation of energy law) to the Lorenz equations. Furthermore, knowing the process that led Edward N. Lorenz, in his studies on convection phenomena in the upper layers of the atmosphere, to the discovery in 1963 of the chaotic dynamics of the three-dimensional system it is possible to propose new and consistent problems, on the one hand, in the modification of the approximations made, and on the other hand, in the mathematical study of other more complex possibilities, such as the obtaining of new decoupled differential equation systems, with a larger number of state variables. Hereafter, we set out to reconstruct the process that led to Lorenz system also setting the basis for the development of these other approaches. Moreover, in relation to the modification of the approximations made, we have advanced in the process of obtaining the Lorenz-type equations in the case in which the coefficient of isothermal compressibility is not neglected.

Qui som? El SIMBa és un seminari jove organitzat pels estudiants de doctorat de les Facultats de Matemàtiques i Informàtica de Barcelona. Està dirigit a estudiants de doctorat, de màster i, fins i tot, dels darrers cursos de grau. El nostre objectiu és donar a conèixer la recerca que estem fent, així com adquirir coneixements d'altres àrees de les matemàtiques diferents de les pròpies.

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